IN THE SPECIFICATION

The paragraph beginning at page 1, immediately below the heading "Description of the Prior Art" has been amended as follows:

Magnetic resonance tomography (MRT), also known as nuclear spin tomography, has become a widespread technique for obtaining images inside the body of a live examination subject. In order to obtain an image using this technique, the body or the body part being examined of the subject must be exposed to a static basic magnetic field (usually known as the B_0 field) which is as homogeneous as possible, the basic magnetic field being generated by a basic field magnet of the magnetic resonance measuring device. While the magnetic resonance images are being recorded, this basic magnetic field has fast-switched gradient fields superimposed on it for spatial ~~coding~~ encoding, which are generated by gradient coils. Moreover, using radio-frequency antennas, radio-frequency pulses with a defined field strength are radiated into the examination subject. The magnetic flux density of these radio-frequency pulses is normally designated as B_1, or rather the pulse-shaped radio-frequency field is generally known as the B_1 field for short. Using these radio-frequency pulses, the nuclear spins of the atoms in the examination subject are excited such that they are deflected by a so-called " excitation flip angle" α (hereafter the "flip angle" α) from their equilibrium position parallel to the basic magnetic field B_0. The nuclear spins then precess around the direction of the basic magnetic field B_0. The magnetic resonance signals generated in this manner are recorded by radio-frequency receiving antennas. The receiving antennas can be either the same antennas which were used to emit the radio-frequency pulses or separate receiving antennas. The magnetic resonance images of the examination

subject are generated based on the received magnetic resonance signals. Each image point in the magnetic resonance image is assigned to a small body volume known as a "voxel" and each brightness or intensity value of the images points is linked to the signal amplitude of the magnetic resonance signal received from this voxel. The relationship between the resonantly radiated B_1 field and the flip angle α thus attained is given by the following equation in the case of a rectangular pulse:

$$\alpha = \gamma \cdot B_1 \cdot \tau \qquad (1)$$

where γ is the gyromagnetic ratio, which can be considered to be a fixed material constant for most nuclear spin studies, and τ is the influence duration of the radio-frequency pulse. The flip angle α attained through an emitted radio-frequency pulse and thus the strength of the magnetic resonance signals depends accordingly, besides on the duration of the pulse, also on the strength of the radiated B_1 field. Fluctuations in the field strength of the excitation B_1 field thus lead to undesired variations in the received magnetic resonance signal which can corrupt the measurement result.

The paragraph beginning at page 3, line 15 has been amended as follows:

In one technique, a series of spin echo images are recorded. Initially a first excitation pulse is emitted which produces a flip angle α, and subsequently a further excitation pulse which produces a flip angle $2 \cdot \alpha$. Afterwards, the "echo signal" is measured. A classic example of such a spin echo recording is the emission of a 90° pulse (i.e., α = 90°) and a 180° pulse which follows after a certain time span. In order to obtain information about the field strength at the different locations within a measurement volume, a number of series of such spin echo images are measured

with different flip angles α. Since it is known that the dependency of the amplitude of the magnetic resonance signal on the angle α should be proportional to $\sin^3\alpha$, by carrying out a corresponding fitting of curves which correspond to the ~~normal~~ nominal distribution to the measured distribution, the actually attained flip angle α and according to equation (1) also the actual B_1 field can be determined for each image pixel. The disadvantage of such measurements is that the technique can be performed only in layers or slices, i.e. only a certain slice thickness of the volume is excited selectively through suitable switching of the gradient fields during the emission of the pulse. This is associated with a very long measurement time of approx. 10 minutes and, due to the layer selection, there is an additional flip angle distribution along the layer normals which results in a corresponding measurement error.

The paragraph beginning at page 6, line 15 has been amended as follows:

Basically, it is possible to carry out the measurement techniques in an integrative manner, i.e., the B_1 field strength is determined within a larger measurement volume not spatially resolved. Naturally, a measurement of this sort can be carried out particularly fast. In a preferred method, however, the magnetic resonance signal is excited in a spatially resolved manner and/or measured within a certain measurement volume and a spatially-dependent phase ~~position~~ of the magnetic resonance signal is determined from this. Based on this spatially-dependent phase ~~position~~, finally, the field strength can be determined as a function of the respective location, i.e., basically for each individual voxel within the measurement volume.

The paragraph beginning at page 7, line 4 has been amended as follows:

The evaluation of the phase ~~position~~ takes place preferably so that initially a flip angle attained due to an excitation radio-frequency pulse or rather a radio-frequency pulse sequence is determined and on the basis of the attained flip angle then the field strength is determined according to equation (1).

The paragraph beginning at page 18, line 21 has been amended as follows:

The mathematical and physical derivations enumerated above on which the measurement technique is based apply for the case in which the radio-frequency magnetic field B_1 is ~~very~~ much greater than the inhomogeneities ΔB_0 of the basic magnetic field B_0. Typically, B_1 field strengths can be attained with which an excitation flip angle $\alpha = \pi$ is attained through a rectangular pulse having a length of 0.5 ms. This corresponds to a field strength of $B_1 = 20\mu T$. This is in contrast to basic field inhomogeneities of approx. $\Delta B_0 = 1ppm \cdot B_0$. In many cases as a result, the assumption that B_1 is very much greater than ΔB_0 can be considered to hold approximately. The case of nuclear spin tomographs having high field strengths of, say, 3 Tesla is problematic. In this case, the basic field inhomogeneities ΔB_0 can reach approx. $3\mu T$.

The paragraph beginning at page 19, line 11 has been amended as follows:

In order to estimate the deviation to be expected due to this effect in the measured flip angle from the flip angle actually attainable at the relevant location through a corresponding B_1 field (without the inhomogeneities of the B_0 field), simulation computations were made in which the Bloch equations for the behavior of the magnetization for radio-frequency excitation in the case $B_1 \approx \Delta B_0$ were solved numerically. Here, a radio-frequency excitation pulse having a total duration of t =

260 μs was assumed. In the computation, a time-step: discrimination of 1 ~~ms~~ <u>μs</u> was used.